APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/007,056	12/03/2001	Joshua G. Poley	MS1-872US	6226

22801 7590 06/02/2005		EXAMINER
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ART UNIT	PAPER NUMBER
2123	

DATE MAILED: 06/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	10/007,056	POLEY ET AL.
	Examiner	**Art Unit**	
	Russell L. Guill	2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>03 December 2001</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) _____ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-14, 28-33</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>03 December 2001</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All   b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date *~~4/4~~*. *2 pages*

4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1 – 45 were previously pending. Claims 15 – 27 and 34 – 45 were cancelled. Claims 1 – 14 and 28 - 33 have been examined. Claims 1 – 14 and 28 - 33 have been rejected.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Frantz (U.S. Patent 6,636,929, October 21, 2003) in view of IbmTechnicalDisclosure (IBM Technical Disclosure Bulletin, "Multiple Control Unit/Device Emulator for Testing Computer Programs", September 1971, Volume 14, Issue 4, pages 1212 - 1213).

4.1.   The art of Frantz is directed toward a system in which a first computer couples to an interface unit via a Universal Serial Bus (USB), and the interface unit couples to a remote computer (***column 1, lines 22 –32***) via a network link (***column 7, lines 9 – 15; and figure 1, element 175; and column 3, lines 65 – 68; and column 4, lines 1 - 30***) such that peripherals and input/output devices of the remote computer appear as peripherals and input/output devices of the first computer (***column 1, lines 22 –32***).

4.2.   The art of IbmTechnicalDisclosure is directed toward using a second computer to emulate multiple input/output devices such that it can be attached to a first computer for testing the first computer system and its computer programs (*page 1212, first paragraph*). It also provides the capability for testing programs that drive currently unavailable devices (*page 1212, first paragraph*).

4.3.   Frantz appears to teach USB peripheral devices (*Abstract, third sentence*).

4.4.   Frantz appears to teach one or more USB interfaces configured to communicate with one or more USB ports of the host to communicate USB messages with the host (*figure 1, elements 150 and 125; and column 5, lines 65 – 67; and column 6, lines 1 – 4 and lines 42 – 45*).

4.5.   Frantz appears to teach a network interface configured to communicate with a peripheral using a network communications protocol (*figure 1, elements 150, 160, 175, 265, 250, 240, 245; and figure 2, elements 170, 270, 285, 290, 240, 245, 295*).

4.6.   Frantz appears to teach operating logic configured to perform actions comprising:

  4.6.1. Receiving USB command messages from the host (*column 10, lines 55 – 67; and column 11, lines 1 – 21; and figure 2*);

  4.6.2. Sending the received command messages to the peripheral through the network interface using the network communications protocol (*figure 2; and figure 3, elements "queries to USB function logic and system prompts", "prompts", "Communicate over appropriate interface"; and column 5, lines 65 – 67; and column 6, lines 1 – 47*).

  4.6.3. Receiving response messages from the peripheral through the network interface using the network communications protocol (*figure 2; and figure 3, elements "communicate over appropriate interface", "instructions", and "remote activity translated to USB"; and column 5, lines 65 – 67; and column 6, lines 1 – 67*);

4.6.4. Sending the received response messages through the one or more USB interfaces to the host (*figure 2, and figure 3; and column 7, lines 45 – 60*).

4.7. Frantz does not specifically teach one or more USB interfaces configured to communicate with one or more USB ports of the *in-test* host to communicate USB messages with the *in-test* host.

4.8. Frantz does not specifically teach a network interface configured to communicate with a peripheral *emulator* using a network communications protocol.

4.9. Frantz does not specifically teach operating logic configured to perform actions comprising:

4.9.1. Receiving USB command messages from the *in-test* host;

4.9.2. Sending the received *USB* command messages to the peripheral *emulator* through the network interface using the network communications protocol;

4.9.3. Receiving *USB* response messages from the peripheral *emulator* through the network interface using the network communications protocol;

4.9.4. Sending the received *USB* response messages through the one or more USB interfaces to the *in-test* host.

4.10. IbmTechnicalDisclosure appears to teach an *in-test* host (*page 1212, first paragraph labeled 2p*) and a peripheral *emulator* (*page 1212, first paragraph labeled 2p*).

4.11. The motivation to use the art of IbmTechnicalDisclosure with the art of Frantz would have been obvious because an ordinary artisan at the time of invention needing to test a first computer communicating with a USB peripheral device across a network, where the peripheral device was not yet available (as taught in IbmTechnicalDisclosure), would have emulated the USB peripherals

(as taught in Frantz, in the Abstract, third sentence) and used the art of IbmTechnicalDisclosure with the art of Frantz to perform the test.

4.12. Therefore, as discussed above, it would have been obvious to the ordinary artisan at the time of invention to use the art of Frantz with the art of IbmTechnicalDisclosure to produce the claimed invention.

5. Claims 2 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frantz (U.S. Patent 6,636,929, October 21, 2003) and IbmTechnicalDisclosure (IBM Technical Disclosure Bulletin, "Multiple Control Unit/Device Emulator for Testing Computer Programs", September 1971, Volume 14, Issue 4, pages 1212 - 1213).

5.1. Claims 2, 4, 11 and 12 are dependent claims of claim 1, and thereby inherit all of the rejected limitations of claim 1.

5.2. Regarding claim 2:

5.2.1. Frantz appears to teach USB peripheral devices (***Abstract, third sentence***).

5.2.2. Frantz does not specifically teach a peripheral emulator that is programmed to emulate one or more USB peripherals.

5.2.3. IbmTechnicalDisclosure appears to teach a peripheral emulator that is programmed to emulate one or more peripherals (***page 1212, first paragraph labeled 2p***).

5.3. Regarding claim 4:

5.3.1. Frantz appears to teach USB peripheral devices (***Abstract, third sentence***).

5.3.2. Frantz does not specifically teach a peripheral emulator that comprises a general-purpose computer programmed to emulate one or more USB peripherals.

5.3.3. IbmTechnicalDisclosure appears to teach a peripheral emulator that comprises general-purpose computer programmed to emulate one or more peripherals (*__page 1212, first__*

__paragraph labeled 2p, and second paragraph__).

5.4.   Regarding claim 11:

5.4.1. Frantz appears to teach an Ethernet network interface (*__column 4, lines 1 – 6__*).

    5.4.1.1.   Regarding (*__column 4, lines 1 – 6__*); it would have been obvious that an Ethernet

communications line uses an Ethernet network interface.

5.5.   Regarding claim 12:

5.5.1. Frantz appears to teach an Ethernet network communications protocol (*__column 4,__*

__lines 1 – 6__).

    5.5.1.1.   Regarding (*__column 4, lines 1 – 6__*); it would have been obvious that an Ethernet

communications line uses an Ethernet network communications protocol.

5.6.   Regarding claims 2 and 4:

5.7.   The motivation to use the art of IbmTechnicalDisclosure with the art of Frantz would have

been obvious because an ordinary artisan at the time of invention needing to test a USB peripheral

device, where the peripheral device was not yet available (as taught in IbmTechnicalDisclosure),

would have emulated the USB peripherals (as taught in Frantz, in the Abstract, third sentence)

and used the art of IbmTechnicalDisclosure with the art of Frantz to perform the test.

6. Claims 3 and 5 and 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Frantz (U.S. Patent 6,636,929, October 21, 2003) and IbmTechnicalDisclosure (IBM Technical

Disclosure Bulletin, "Multiple Control Unit/Device Emulator for Testing Computer Programs",

September 1971, Volume 14, Issue 4, pages 1212 - 1213), in view of UsbHidClassDefinition

(Universal Serial Bus, "Device Class Definition for Human Interface Devices (HID)", Version

1.11,June 27, 2001), further in view of UsbSpecs ("Universal Serial Bus Specification", Revision

1.1, September 23, 1998).

6.1.   Claims 3, 5, 9 and 10 are dependent claims of claim 1, and thereby inherit all of the

rejected limitations of claim 1.

6.2.   The art of UsbSpecs is directed to specifications for Universal Serial Bus Specifications

(Title).

6.3.   The art of UsbHidClassDefinition is directed to specifications for device class definition for

human interface devices (HID).

6.4.   Regarding claim 3:

6.4.1. Frantz appears to teach USB peripheral devices (***Abstract, third sentence***).

6.4.2. Frantz does not specifically teach a peripheral emulator programmed to emulate HID,

bulk, and isochronous USB peripherals.

6.4.3. IbmTechnicalDisclosure appears to teach a peripheral emulator that is programmed to

emulate one or more peripherals (***page 1212, first paragraph labeled 2p***).

6.4.4. UsbHidClassDefinition appears to teach HID peripherals (***page 1, section 2.1 Scope***).

6.4.5. UsbSpecs appears to teach bulk (***page 46, section 5.8 Bulk Transfers***) and

isochronous (***page 41, section 5.6 Isochronous Transfers***) peripherals.

6.5.   Regarding claim 5:

6.5.1. Frantz appears to teach USB peripheral devices (***Abstract, third sentence***).

6.5.2. Frantz does not specifically teach a peripheral emulator comprising a general-purpose computer programmed to emulate HID, bulk, and isochronous USB peripherals.

6.5.3. IbmTechnicalDisclosure appears to teach a peripheral emulator comprising a general-purpose computer that is programmed to emulate one or more peripherals (***page 1212, first paragraph labeled 2p, and second paragraph***).

6.5.4. UsbHidClassDefinition appears to teach HID peripherals (***page 1, section 2.1 Scope***).

6.5.5. UsbSpecs appears to teach bulk (***page 46, section 5.8 Bulk Transfers***) and isochronous (***page 41, section 5.6 Isochronous Transfers***) peripherals.

6.6.   Regarding claim 9:

6.6.1. Frantz does not specifically teach that a USB interface comprises at least four USB interfaces.

6.6.2. UsbSpecs appears to teach a USB interface that comprises at least four USB interfaces (***page 22, 4-3***).

6.6.3. The motivation to use the art of UsbSpecs with the art of Frantz would have been obvious because an ordinary artisan at the time of invention needing to test a large number of USB peripheral devices would have needed the multiple interfaces provided in UsbSpecs.

6.7.   Regarding claim 10:

6.7.1. Frantz does not specifically teach that USB messages comprise HID, bulk and isochronous USB messages.

6.7.2. UsbSpecs appear to teach that USB messages comprise bulk and isochronous USB messages (***page 41, section 5.6 Isochronous Transfers; and page 46, section 5.8 Bulk Transfers***).

6.7.3. UsbHidClassDefinition appears to teach HID USB messages (***page 4, the figure below the third paragraph***).

6.7.4. The motivation to use the art of UsbSpecs with the art of Frantz would have been obvious because an ordinary artisan at the time of invention needing to test USB peripheral devices of the bulk and isochronous types would have needed the bulk and isochronous USB messages in UsbSpecs.

6.7.5. The motivation to use the art of UsbHidClassDefinition with the art of Frantz would have been obvious because an ordinary artisan at the time of invention needing to test a USB peripheral device of the HID type would have needed the HID USB message in UsbHidClassDefinition.

6.8. Regarding claims 3 and 5:

6.9. The motivation to use the art of IbmTechnicalDisclosure, UsbHidClassDefinition and UsbSpecs with the art of Frantz would have been obvious because an ordinary artisan at the time of invention needing to test USB peripheral devices of the types HID, bulk, and isochronous, where the peripheral device was not yet available (as taught in IbmTechnicalDisclosure), would have emulated the USB peripherals (as taught in Frantz, in the Abstract, third sentence) and used the art of IbmTechnicalDisclosure, UsbHidClassDefinition and UsbSpecs with the art of Frantz to perform the test.

7. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frantz (U.S. Patent 6,636,929, October 21, 2003) and IbmTechnicalDisclosure (IBM Technical Disclosure Bulletin,

"Multiple Control Unit/Device Emulator for Testing Computer Programs", September 1971, Volume 14, Issue 4, pages 1212 - 1213), in view of McConnell (McConnell, Steve; "Code Complete", 1993, Microsoft Press).

7.1.   Claims 6 and 7 are dependent claims of claim 1, and thereby inherit all of the rejected limitations of claim 1.

7.2.   The art of McConnell is directed toward software construction (Book cover), including testing (**_page 589, chapter title_**).

7.3.   Regarding claim 6:

7.3.1. Frantz appears to teach USB peripheral devices (**_Abstract, third sentence_**).

7.3.2. Frantz appears to teach that a peripheral generates response messages to a host with peripheral parameters (**_figure 2; and figure 3, elements "communicate over appropriate interface", "instructions", and "remote activity translated to USB", elements 155 and 315; and column 5, lines 65 – 67; and column 6, lines 1 – 67_**);

7.3.3. Frantz does not specifically teach **_a peripheral emulator comprises a general-purpose computer._**

7.3.4. Frantz does not specifically teach **_a general-purpose computer programmed to emulate one or more USB peripherals_**.

7.3.5. Frantz does not specifically teach a **_general-purpose computer_** further programmed to generate **_USB_** response messages **_that test the in-test_** host with ranges of **_USB_** peripheral parameters.

7.3.6. IbmTechnicalDisclosure appears to teach a peripheral emulator comprises a general-purpose computer (**_page 1212, first paragraph labeled 2p and second paragraph_**).

7.3.7. IbmTechnicalDisclosure appears to teach a general-purpose computer programmed to emulate one or more peripherals (*__page 1212, first paragraph labeled 2p and second paragraph__*).

7.3.8. IbmTechnicalDisclosure appears to teach testing an in-test host (*__page 1212, first paragraph labeled 2p and second paragraph__*).

7.3.9. McConnell appears to teach testing with ranges of parameters (*__page 604, section "Classes of Good Data", especially bullet "Maximum normal configuration"__*).

7.4. Regarding claim 7:

7.4.1. Frantz appears to teach USB peripheral devices (*__Abstract, third sentence__*).

7.4.2. Frantz appears to teach that a peripheral generates response messages to a host with peripheral parameters (*__figure 2; and figure 3, elements "communicate over appropriate interface", "instructions", and "remote activity translated to USB", elements 155 and 315; and column 5, lines 65 – 67; and column 6, lines 1 – 67__*);

7.4.3. Frantz does not specifically teach *__a peripheral emulator comprises a general-purpose computer__*.

7.4.4. Frantz does not specifically teach *__a general-purpose computer programmed to emulate one or more USB peripherals__*.

7.4.5. Frantz does not specifically teach a *__general-purpose computer__* further programmed to generate *__abnormal USB__* response messages *__in order to test the in-test__* host with *__such abnormal USB__* response messages.

7.4.6. IbmTechnicalDisclosure appears to teach a peripheral emulator comprises a general-purpose computer (*__page 1212, first paragraph labeled 2p and second paragraph__*).

7.4.7. IbmTechnicalDisclosure appears to teach a general-purpose computer programmed to emulate one or more peripherals (*page 1212, first paragraph labeled 2p and second paragraph*).

7.4.8. IbmTechnicalDisclosure appears to teach testing an in-test host (*page 1212, first paragraph labeled 2p and second paragraph*).

7.4.9. McConnell appears to teach testing with abnormal parameters (*page 603, section "Classes of Bad Data", especially bullet "the wrong kind of data (invalid data)"*).

7.5. Regarding all claims:

7.6. The motivation to use the art of IbmTechnicalDisclosure with the art of Frantz would have been obvious because an ordinary artisan at the time of invention needing to test a USB peripheral device, where the peripheral device was not yet available (as taught in IbmTechnicalDisclosure), would have emulated the USB peripherals (as taught in Frantz, in the Abstract, third sentence) and used the art of IbmTechnicalDisclosure with the art of Frantz to perform the test. Further, the artisan would have been motivated to use the art of McConnell because in order to test the software.

8. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Frantz (U.S. Patent 6,636,929, October 21, 2003) and IbmTechnicalDisclosure (IBM Technical Disclosure Bulletin, "Multiple Control Unit/Device Emulator for Testing Computer Programs", September 1971, Volume 14, Issue 4, pages 1212 - 1213), in view of UsbSpecs ("Universal Serial Bus Specification", Revision 1.1, September 23, 1998), further in view of Tanenbaum (Tanenbaum, Andrew S.; "Computer Networks", third edition, 1996, Pentice-Hall).

8.1. Claim 8 is a dependent claim of claim 1, and thereby inherits all of the rejected limitations of claim 1.

8.2. The art of Tanenbaum is directed to computer communication networks (***Title***).

8.3. The art of UsbSpecs is directed to specifications for Universal Serial Bus Specifications (Title).

8.4. Frantz appears to teach USB peripheral devices (***Abstract, third sentence***).

8.5. Frantz appears to teach that a particular command message is designated for a particular one of a plurality of different emulated peripheral devices (***column 3, lines 65 – 68; and column 4, lines 1 – 30***).

> **8.5.1.** Regarding (***column 3, lines 65 – 68; and column 4, lines 1 – 30***); since there were a plurality of peripheral devices, it would have been obvious that a command message is designated for a particular one of the peripherals.

8.6. Frantz appears to teach operating logic (***column 3, lines 65 – 68; and column 4, lines 1 – 30***).

8.7. Frantz does not specifically teach that a particular ***USB*** command message is designated for a particular one of a plurality of different emulated peripheral devices.

8.8. Frantz does not specifically teach that the network communications protocol supports a plurality of logical ports.

8.9. Frantz does not specifically teach that the operating logic maintains a correspondence between emulated peripheral devices and logical ports.

8.10. Frantz does not specifically teach that the operating logic sends said particular USB command message to one of the logical ports that corresponds to said one of the plurality of the different emulated peripheral devices.

8.11. Tanenbaum appears to teach a network communications protocol that supports a plurality of logical ports (*pages 486 – 487, section labeled "Berkeley Sockets", especially figure 6-6, primitives SOCKET and BIND*).

    8.11.1. Regarding (*pages 486 – 487, section labeled "Berkeley Sockets", especially figure 6-6, primitives SOCKET and BIND*); it would have been obvious that the network communications protocol supports a plurality of logical ports, because multiple sockets and addresses can be created.

8.12. UsbSpecs appears to teach that operating logic maintains a correspondence between peripheral devices and logical ports (*page 21, section 4.8.1 Device Characterizations, first sentence*).

    8.12.1. Regarding (*page 21, section 4.8.1 Device Characterizations, first sentence*); it would have been obvious that operating logic was used to maintain a correspondence between a peripheral device and an address (a type of logical port).

8.13. UsbSpecs appears to teach operating logic sends a particular USB command message to one of the ports that corresponds to one of a plurality of different peripheral devices (*page 21, section 4.8.1 Device Characterizations, first sentence; and page 36, section 5.5 Control Transfers, second sentence*).

    8.13.1. Regarding (*page 21, section 4.8.1 Device Characterizations, first sentence; and page 36, section 5.5 Control Transfers, second sentence*); it would have been obvious that operating logic sends a particular USB command message to one of the ports that corresponds to one of a plurality of different peripheral devices.

8.14. The motivation to use the art of UsbSpecs with the art of Frantz with the art of Frantz would have been obvious because an ordinary artisan at the time of invention needing to test USB

peripheral devices would have needed the USB specifications, and the USB specifications are provided by UsbSpecs.

8.15. The motivation to use the art of Tanenbaum with the art of Frantz would have been obvious because an ordinary artisan at the time of invention needing to test USB peripheral devices, where the peripheral devices were available across a network, would have needed a network communications protocol, and Tanenbaum provides a network communication protocol (Berkeley sockets).

9. Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frantz (U.S. Patent 6,636,929, October 21, 2003) and IbmTechnicalDisclosure (IBM Technical Disclosure Bulletin, "Multiple Control Unit/Device Emulator for Testing Computer Programs", September 1971, Volume 14, Issue 4, pages 1212 - 1213), in view of Tanenbaum (Tanenbaum, Andrew S.; "Computer Networks", third edition, 1996, Pentice-Hall).

9.1. Claims 13 and 14 are dependent claims of claim 1, and thereby inherit all of the rejected limitations of claim 1.

9.2. The art of Tanenbaum is directed to computer communication networks (***Title***).

9.3. Regarding claim 12:

9.3.1. Frantz does not specifically teach the IP network communications protocol.

9.3.2. Tanenbaum appears to teach the IP network communication protocol (***page 412, last paragraph that starts with "The glue . . ."***).

9.3.3. The motivation to use the art of Tanenbaum with the art of Frantz would have been obvious because an ordinary artisan at the time of invention using the Internet

communications line of Frantz (*column 4, lines 1 – 6*) would naturally use the Internet

Protocol (IP) of Tanenbaum.

9.4.   Regarding claim 13:

9.4.1. Frantz does not specifically teach the UDP over IP network communications protocol.

9.4.2. Tanenbaum appears to teach the UDP over IP network communications protocol (*page 542, section 6.4.8*).

9.4.3. The motivation to use the art of Tanenbaum with the art of Frantz would have been

obvious because an ordinary artisan at the time of invention using the Internet

communications line of Frantz (*column 4, lines 1 – 6*) would naturally use the UDP over IP

network communications protocol because it is faster than establishing and releasing a

connection (*Tanenbaum, page 542, section 6.4.8*).

10. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Frantz (U.S. Patent

6,636,929, October 21, 2003) in view of IbmTechnicalDisclosure (IBM Technical Disclosure

Bulletin, "Multiple Control Unit/Device Emulator for Testing Computer Programs", September

1971, Volume 14, Issue 4, pages 1212 - 1213).

10.1.   The art of Frantz is directed toward a system in which a first computer couples to an

interface unit via a Universal Serial Bus (USB), and the interface unit couples to a remote

computer (*column 1, lines 22 –32*) via a network link (*column 7, lines 9 – 15; and figure 1,*

element 175; and column 3, lines 65 – 68; and column 4, lines 1 - 30) such that peripherals

and input/output devices of the remote computer appear as peripherals and input/output devices

of the first computer (*column 1, lines 22 –32*).

10.2.   The art of IbmTechnicalDisclosure is directed toward using a second computer to emulate

multiple input/output devices such that it can be attached to a first computer for testing the first

computer system and its computer programs (*page 1212, first paragraph*). It also provides the

capability for testing programs that drive currently unavailable devices (*page 1212, first*

paragraph).

10.3. Frantz appears to teach USB peripheral devices (*Abstract, third sentence*).

10.4. Frantz appears to teach receiving USB command messages from the host (*figure 1,*

elements 125 and 150; figure 2, elements 100, 150, 80, 86, 87, 125, 181; and column 3,

lines 65 –67; and column 4, lines 1 – 16).

10.5. Frantz appears to teach packaging the received USB command messages in command data

packets formatted in accordance with a network communications protocol (*figure 1, elements*

150, 160, 175, 265, 250; figure 2, elements 150, 170, 180, 155, 190, 165, 195, 175, 270;

and column 3, lines 65 –67; and column 4, lines 1 – 16).

> **10.5.1.**   Regarding (*figure 1, elements 150, 160, 175, 265, 250; figure 2, elements*
>
> *150, 170, 180, 155, 190, 165, 195, 175, 270; and column 3, lines 65 –67; and column*
>
> *4, lines 1 – 16*); since in column 4, lines 1 – 16, it is recited that communication is through
>
> methods such as Ethernet or Internet, it would have been obvious that the received USB
>
> command messages were packaged in command data packets formatted in accordance with a
>
> network communications protocol.

10.6. Frantz appears to teach sending the command data packets to one or more peripherals over

network communications media (*figure 2, elements 150, 200, 170, 175, 270, 285, 225, 235,*

280, 290, 240, 245, 295; and column 3, lines 65 –67; and column 4, lines 1 – 47).

10.7. Frantz appears to teach receiving response data packets from the one or more peripherals

over the network communications media, wherein the response data packets are formatted in

accordance with a network communications protocol (*figure 2, elements 150, 200, 170, 175,*

270, 285, 225, 235, 280, 290, 240, 245, 295; and column 3, lines 65 –67; and column 4,

lines 1 – 47).

    10.7.1.   Regarding *(figure 2, elements 150, 200, 170, 175, 270, 285, 225, 235, 280,*

290, 240, 245, 295; and column 3, lines 65 –67; and column 4, lines 1 – 47); since in

column 4, lines 1 – 16, it is recited that communication is through methods such as Ethernet

or Internet, it would have been obvious that the response data packets were formatted in

accordance with a network communications protocol.

10.8.   Frantz appears to teach unpackaging USB response messages from the received response

data packets *(figure 2, elements 270, 175, 170, 195,180, 181, 125, 87, 86, 80, 155, 190,*

165; column 3, lines 65 –67; and column 4, lines 1 – 47; and figure 3, elements 155, 325,

320, 25, 315, and connecting communication links).

    10.8.1.   Regarding *(figure 2, elements 270, 175, 170, 195,180, 181, 125, 87, 86,*

80, 155, 190, 165; column 3, lines 65 –67; and column 4, lines 1 – 47; and figure 3,

elements 155, 325, 320, 25, 315, and connecting communication links); it would have

been obvious that the system was unpackaging USB response messages from the received

response data packets.

10.9.   Frantz appears to teach sending the unpackaged, USB response messages to the host

(figure 2, elements 270, 175, 170, 195,180, 181, 125, 87, 86, 80, 155, 190, 165; column 3,

lines 65 –67; and column 4, lines 1 – 47; and figure 3, elements 155, 325, 320, 25, 315,

and connecting communication links).

    10.9.1.   Regarding *(figure 2, elements 270, 175, 170, 195,180, 181, 125, 87, 86,*

80, 155, 190, 165; column 3, lines 65 –67; and column 4, lines 1 – 47; and figure 3,

elements 155, 325, 320, 25, 315, and connecting communication links); it would have

been obvious that the system was sending unpackaged, USB response messages to the host.

10.10. Frantz does not specifically teach receiving USB command messages from the ***in-test*** host.

10.11. Frantz does not specifically teach sending the command data packets to one or more peripheral ***emulators*** over network communications media.

10.12. Frantz does not specifically teach receiving response data packets from the one or more peripheral ***emulators*** over the network communications media, wherein the response data packets are formatted in accordance with a network communications protocol.

10.13. Frantz does not specifically teach sending the unpackaged, USB response messages to the ***in-test*** host.

10.14. IbmTechnicalDisclosure appears to teach an ***in-test*** host (***page 1212, first paragraph labeled 2p***) and a peripheral ***emulator*** (***page 1212, first paragraph labeled 2p***).

10.15. The motivation to use the art of IbmTechnicalDisclosure with the art of Frantz would have been obvious because an ordinary artisan at the time of invention needing to test a first computer communicating with a USB peripheral device across a network, where the peripheral device was not yet available (as taught in IbmTechnicalDisclosure), would have emulated the USB peripherals (as taught in Frantz, in the Abstract, third sentence) and used the art of IbmTechnicalDisclosure with the art of Frantz to perform the test.

10.16. Therefore, as discussed above, it would have been obvious to the ordinary artisan at the time of invention to use the art of Frantz with the art of IbmTechnicalDisclosure to produce the claimed invention.

11. Claims 29 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frantz (U.S. Patent 6,636,929, October 21, 2003) and IbmTechnicalDisclosure (IBM Technical Disclosure Bulletin, "Multiple Control Unit/Device Emulator for Testing Computer Programs", September 1971, Volume 14, Issue 4, pages 1212 - 1213).

11.1. Claims 29 and 31 are dependent claims of claim 28, and thereby inherit all of the rejected

limitations of claim 28.

11.2. Regarding claim 29:

11.2.1.   Frantz appears to teach USB peripheral devices (***Abstract, third sentence***).

11.2.2.   Frantz does not specifically teach emulating one or more different USB

peripherals within the one or more peripheral emulators to create the incoming USB messages.

11.2.3.   IbmTechnicalDisclosure appears to teach emulating one or more different

peripherals within one or more peripheral emulators to create the incoming peripheral

messages (***page 1212, first paragraph labeled 2p and second paragraph***).

11.2.3.1. Regarding (***page 1212, first paragraph labeled 2p and second paragraph***);

it would have been obvious that the peripheral emulator creates incoming peripheral

messages.

11.3. Regarding claim 31:

11.3.1.   Frantz appears to teach an Ethernet network communications protocol (***column

4, lines 1 – 6***).

11.3.1.1. Regarding (***column 4, lines 1 – 6***); it would have been obvious that an Ethernet

communications line uses an Ethernet network communications protocol.

12. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Frantz (U.S. Patent

6,636,929, October 21, 2003) and IbmTechnicalDisclosure (IBM Technical Disclosure Bulletin,

"Multiple Control Unit/Device Emulator for Testing Computer Programs", September 1971, Volume

14, Issue 4, pages 1212 - 1213), in view of McConnell (McConnell, Steve; "Code Complete", 1993,

Microsoft Press).

12.1.   Claim 30 is dependent claim of claim 28, and thereby inherits all of the rejected limitations

of claim 28.

12.2.   The art of McConnell is directed toward software construction (Book cover), including

testing (***page 589, chapter title***).

12.3.   Frantz appears to teach response messages in response to the packaged command

messages and packaging said response messages in the response data packets (***figure 2; and***

figure 3, elements "communicate over appropriate interface", "instructions", and "remote

activity translated to USB", elements 155 and 315; and column 5, lines 65 – 67; and

column 6, lines 1 – 67).

   12.3.1.   Regarding (***figure 2; and figure 3, elements "communicate over appropriate***

   interface", "instructions", and "remote activity translated to USB", elements 155 and

   315; and column 5, lines 65 – 67; and column 6, lines 1 – 67); it would have been obvious

   that there were response messages in response to the packaged command messages and that

   the said response messages were packaged in response data packets.

12.4.   Frantz does not specifically teach creating ***abnormal*** USB response messages in response

to the packaged USB command messages and packaging said abnormal USB response messages in

the response data packets in order to test the ***in-test*** host's ability to handle such abnormal USB

response messages.

12.5.   IbmTechnicalDisclosure appears to teach an in-test host (***page 1212, first paragraph***

and second paragraph).

12.6.   McConnell appears to teach testing with abnormal parameters in order to test the

software's ability to handle such abnormal parameters (***page 589, and page 603, section***

"Classes of Bad Data", especially bullet "the wrong kind of data (invalid data)").

12.7. The motivation to use the art of IbmTechnicalDisclosure with the art of Frantz would have

been obvious because an ordinary artisan at the time of invention needing to test a USB peripheral

device, where the peripheral device was not yet available (as taught in IbmTechnicalDisclosure),

would have emulated the USB peripherals (as taught in Frantz, in the Abstract, third sentence)

and used the art of IbmTechnicalDisclosure with the art of Frantz to perform the test. Further, the

artisan would have been motivated to use the art of McConnell because in order to test the

software.

12.8. Therefore, as discussed above, it would have been obvious to the ordinary artisan at the

time of invention to use the art of IbmTechnicalDisclosure and McConnell with the art of Frantz to

produce the claimed invention.

13. Claims 32 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frantz (U.S.

Patent 6,636,929, October 21, 2003) and IbmTechnicalDisclosure (IBM Technical Disclosure

Bulletin, "Multiple Control Unit/Device Emulator for Testing Computer Programs", September

1971, Volume 14, Issue 4, pages 1212 - 1213), in view of Tanenbaum (Tanenbaum, Andrew S.;

"Computer Networks", third edition, 1996, Pentice-Hall).

13.1. Claims 32 and 33 are dependent claims of claim 28, and thereby inherit all of the rejected

limitations of claim 28.

13.2. The art of Tanenbaum is directed to computer communication networks (***Title***).

13.3. Regarding claim 32:

    13.3.1.   Frantz does not specifically teach the IP network communications protocol.

    13.3.2.   Tanenbaum appears to teach the IP network communication protocol (***page***

412, last paragraph that starts with "The glue . . .").

13.3.3.   The motivation to use the art of Tanenbaum with the art of Frantz would have

been obvious because an ordinary artisan at the time of invention using the Internet

communications line of Frantz (***column 4, lines 1 – 6***) would naturally use the Internet

Protocol (IP) of Tanenbaum.

13.4.   Regarding claim 33:

13.4.1.   Frantz does not specifically teach the UDP over IP network communications

protocol.

13.4.2.   Tanenbaum appears to teach the UDP over IP network communications protocol

(***page 542, section 6.4.8***).

13.4.3.   The motivation to use the art of Tanenbaum with the art of Frantz would have

been obvious because an ordinary artisan at the time of invention using the Internet

communications line of Frantz (***column 4, lines 1 – 6***) would naturally use the UDP over IP

network communications protocol because it is faster than establishing and releasing a

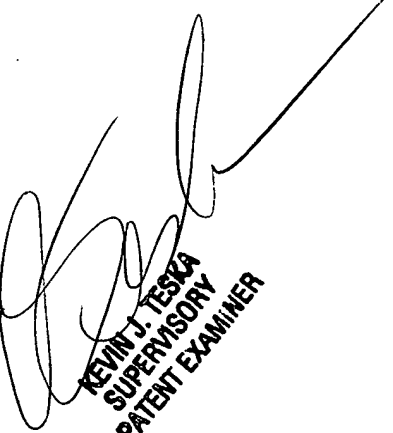connection (***Tanenbaum, page 542, section 6.4.8***).

Conclusion

14. Any inquiry concerning this communication or earlier communications from the examiner should

be directed to Russell L. Guill whose telephone number is 571-272-7955. The examiner can

normally be reached on Monday – Friday 9:00 AM – 5:30 PM.

15. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kevin

Teska can be reached on 571-272-3716. The fax phone number for the organization where this

application or proceeding is assigned is 703-872-9306. Any inquiry of a general nature or relating

to the status of this application should be directed to the TC2100 Group Receptionist: 571-272-2100.

16. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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